

What is Claimed:

1. A method for filling empty cells of a range of cells on the basis of sample values contained in a sub-set of said range of cells, in a multi-dimensional spreadsheet comprising a plurality of cells identified by a cell address along each dimension, a range of cells comprising a plurality of cells, said method comprising the steps of:

selecting a range of cells, said range comprising a plurality of sample cells and one or a plurality of empty cells, a sample cell containing a sample value, an empty cell containing no value or a value not considered as a sample value; the content  $y_i$  of each sample cell and each empty cell being associated with a particular value  $x_i$  of a variable  $x$ ;

activating a fill-by-sample operation, said fill-by-sample operation comprising the step of:

ordering the sample cells and the empty cells according to the values  $x_i$  associated with the content of said cells;

and for each empty cell, the steps of:

identifying the value  $x_i$  associated with the content of the empty cell;

selecting one or a plurality of previous sample cells, if any;

selecting one or a plurality of next sample cells, if any;

computing the value  $y_i$  of the empty cell according to the values  $y_{\text{previous}}$  contained in the selected one or plurality of

previous sample cells, and the values  $y_{next}$  contained in the selected one or plurality of next sample cells;  
filling the empty cell with said computed value  $y_i$ .

2. The method according to claim 1 wherein said step of computing the value  $y_i$  of each empty cell according to the values  $y_{previous}$  contained in the selected one or plurality of previous sample cells, and the values  $y_{next}$  contained in the selected one or plurality of next sample cells, comprises the further step of:

computing the value of the empty cell according to the values  $x_{previous}$  associated with the content  $y_{previous}$  of the selected one or plurality of previous sample cells, and the values  $x_{next}$  associated with the content  $y_{next}$  of the selected one or plurality of next sample cells.

3. The method according to claim 1 comprising the further steps of:

automatically filling cells in the range when one or a plurality of sample cells in the range are changed.

4. The method according to claim 1 comprising the further steps of:

automatically filling cells in the range when one or a plurality of empty cells in the range is changed.

5. The method according to Claim 1 comprising the further step of:

automatically filling cells when one or a plurality of sample cells or one or a plurality of empty cells are added to the range.

6. The method according to claim 1 comprising the further step of:

automatically filling cells when one or a plurality of sample cells or one or a plurality of empty cells are deleted.

7. The method according to claim 1 wherein the selected range of cells further comprises variable cells, a variable cell containing a value  $x_i$  associated with the content  $y_i$  of a particular sample cell or a particular empty cell.

8. The method according to claim 1 wherein the step of computing the value  $y_i$  of an empty cell comprises the step of:

computing the value  $y_i$  as equal to:

$$y_i = y_{\text{previous}} + (x_i - x_{\text{previous}}) * ((y_{\text{next}} - y_{\text{previous}}) / (x_{\text{next}} - x_{\text{previous}}))$$

where :

$y_{\text{previous}}$  is the content of a previous cell containing a sample;

$x_{\text{previous}}$  is the value of the variable  $x$  associated with the content of the previous cell containing a sample;  
 $y_{\text{next}}$  is the content of a following cell containing a sample;  
 $x_{\text{next}}$  is the value of the variable  $x$  associated with the content of a following cell containing a sample;  
 $x_i$  is the value of the variable  $x$  associated with the empty cell.

9. The method according to claim 1 wherein said selected range of cells comprises :

a single column or single row range of cells, said range of cells comprising  $N$  cells, wherein the  $i$ -th cell in the column or row comprises a value  $y_i = f(i)$ , or  
a double column or double row range of cells, said range of cells comprising  $2N$  cells, wherein the  $i$ -th cell in a first column or first row comprises a value  $x_i$  and the second column or second row comprises a value  $y_i = f(x_i)$ .

10. The method according to claim 1 wherein the step of filling cells comprises the further step of:

defining a table and associating said table with the selected range of cells, said table comprising for each empty cell  $i$ :

an "index field" for identifying said empty cell;

a "sample field" for indicating that said cell is an empty cell;

a " $X_i$  field" with the value  $x_i$  associated with said empty cell;

an "index of previous sample field" with the value of the "index field" of a previous record having a sample value;

a "Xprev. sample field" with the value of the " $X_i$  field" of a previous record having a sample value;

a " $f(X_{\text{prev. sample}})$  field" with a value  $y = f(x)$  of a cell in the range corresponding to a previous record having a sample value;

an "index of next sample field" with a value of the "index field" of a next record having a sample value;

a "Xnext sample field" with a value of the " $X_i$  field" of a next record having a sample value;

a " $f(X_{\text{next sample}})$  field" with a value  $y = f(x)$  of a cell in the range corresponding to a next record having a sample value;

11. The method according to claim 10 wherein said table further comprises for each sample cell i:

an "index field" for identifying said sample cell;

a "sample field" for indicating that said cell is a sample cell;

a " $X_i$  field" with the value  $x_i$  associated with said sample cell;

the "index of previous sample field" with the value of the  
"index field" of said sample cell;

a "Xprev. sample field" with the value of the " $X_i$  field" of said  
sample cell;

the " $f(X_{\text{prev. sample}})$  field" with the value  $y = f(x)$  of said  
sample cell;

the "index of next sample field" with the value of the "index  
field" of said sample cell;

the " $X_{\text{next sample}}$  field" with the value of the " $X_i$  field" of said  
sample cell;

the " $f(X_{\text{next sample}})$  field" with the value  $y = f(x)$  of said  
sample cell.

12. The method according to claim 11 wherein said table comprises  
N records, where N equals the number of rows in a single or  
double column range of cells or the number of columns in a single  
or double row range of cells.

13. A system comprising means adapted for carrying out the method  
according to any one of the preceding claims.

14. A computer program comprising instructions adapted for carrying out the method according to any one of claims 1 to 12 when said computer program is executed on a computer.